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T WAVE SLOPES: A NOVEL METHOD FOR ASSESSMENT OF REPOLARIZATION DISPERSION FROM SURFACE ECGS WITH PROLONGED QT AS COMPARED TO NORMAL ECGS

Moderated Poster Contributions
Hall C
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The normal (NL) T wave in health is asymmetric [gentler initial slope (TInit SI), steeper terminal slope (TTerm SI)]. The T Peak - T End (TP-TE) interval reflects repolarization dispersion; a prolonged QTc (LQT, Bazett) is associated with TP-TE prolongation and increased arrhythmic risk. We evaluated automated T wave TInitSI and TTermSI measurements (mV/ms) from NL and LQT ECGs as novel measures of repolarization dispersion.

Methods: An automated formula was devised to calculate TInit SI and TTerm SI from digital ECGs using the lead with the tallest/deepest T wave. The slope of the best-fit tangent was calculated for 50 - 90% of TInit SI and for 20 - 90% of TTerm SI. Absolute values of TInit SI & TTerm SI, absolute slope difference ([TTerm SI]-[TInit SI]), & TP-TE intervals were automatically generated. NLs were identified by NL echo and NL ECG. LQT ECGs were selected by QTc >500 of any etiology; all heart rates were between 50 - 90 bpm.

Results: 100 NL, 186 LQT ECGs were analyzed (Table). All T wave slope measurements and TP-TE were significantly different between NL and LQT ECGs. TTerm SI ≤5 was seen in 5/100 NLs and 76/186 LQT ECGs, Spec=95%, PPV=94%, P<0.001.

Conclusions: Automated T wave slopes are significantly different in NL vs. LQT ECGs. Mean TP-TE intervals were <17 ms different, highlighting difficulty in measurement. T wave slope, a novel automated method of assessing repolarization dispersion, may be less prone to measurement error and may be useful in identifying arrhythmic risk in various disease states.

Table: T Wave Slopes, QTc, and T Peak - T End in Normals and Prolonged QT ECGs

	NL (n=100)	LQT (n=186)	P Value
Age (years)	40.0	65.8	<0.001
Initial T Wave Slope (mV/ms)	8.00	5.75	<0.001
Terminal T Wave Slope (mV/ms	10.70	7.06	<0.001
Slope Difference (Terminal - Initial)	2.70	1.31	<0.001
T Peak - T End	106.59	123.29	<0.001
NL=Normal ECGs, LQT=ECGs with QTc>500 ms			